

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME Calvert Cliffs Nuclear Power Plant, Unit 1	2. DOCKET NUMBER 05000 317	3. PAGE 1 OF 005
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4. TITLE
Pressurizer Safety Valve Setpoint High Due to Low Torque and Misalignment

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
07	21	2008	2008	- 002 -	00	09	11	2008		05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE 1	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: (Check all that apply)									
	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)						
10. POWER LEVEL 100	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)						
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)						
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)						
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)						
	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)						
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)						
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> OTHER						
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A						

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME A. L. Simpson, Principal Engineer	TELEPHONE NUMBER (Include Area Code) 410-495-6913
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
X	AB	RV	D243	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☒ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☐ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR
11	19	2008

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On July 21, 2008, during scheduled testing at the offsite testing facility, the As-Found Lift Setting for Pressurizer Safety Valve Serial Number BM07952 was measured higher than the Technical Specification allowable value. The valve had been installed in Unit 1 at the 1RV201 location (Unit 1 pressurizer safety valve) and was removed during the 2008 Unit 1 refueling outage for scheduled testing and maintenance. To determine the cause of the high setpoint condition, the valve was disassembled and inspected by a vendor technician on July 25, 2008. A low inlet nozzle torque value and indications of internal valve misalignment were identified during the inspection. Although the apparent cause evaluation is not complete, it is reasonable to assume that the low nozzle torque and internal valve misalignment most likely led to the high setpoint during valve testing on July 21, 2008. A review of the testing and maintenance records for the currently installed valves indicated that they are not susceptible to the condition that led to the high setpoint of BM07952. Additional evaluations are required to determine the apparent cause and establish final corrective actions. A supplemental licensee event report will be submitted after the evaluations are completed.

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I. DESCRIPTION OF EVENT

A. PRE-EVENT PLANT CONDITIONS

Unit 1 was operating at 100 percent of rated thermal power on July 21, 2008.

B. EVENT

On July 21, 2008, during scheduled testing at the offsite testing facility, the As-Found Lift Setting for Pressurizer Safety Valve (PSV) Serial Number BM07952 was measured higher than the Technical Specification allowable value. The valve had been installed in Unit 1 at the 1RV201 location (Unit 1 PSV) and was removed during the 2008 Unit 1 refueling outage for scheduled testing and maintenance. To determine the cause of the high setpoint condition, the valve was disassembled and inspected by a vendor technician on July 25, 2008. A low inlet nozzle torque value and indications of internal valve misalignment were identified during the inspection. Although the apparent cause evaluation is not complete, it is reasonable to assume that the low nozzle torque and valve misalignment most likely led to the high setpoint during valve testing on July 21, 2008. Calvert Cliffs owns eight PSVs, four sets of two that are rotated between a specific location. The most recent repair and testing records for the four installed PSVs (1/2RV200 and 1/2RV201) were reviewed and compared with the records of BM07952 to determine if they were susceptible to the same condition. All valves currently installed in Units 1 and 2 were verified not susceptible to the subject condition and verified to be set properly. Additional evaluations are required to determine the apparent cause and establish final corrective actions. A supplemental Licensee Event Report (LER) will be submitted after the Apparent Cause Evaluation (IRE-033-089) is completed. However, based on the information available at this time, it is likely that the high setpoint condition existed for a time longer than the Technical Specification allowed completion time. Therefore, this condition is reportable pursuant to the reporting criteria specified in 10 CFR 50.73(a)(2)(i)(B).

Because this condition is isolated to one serial number for a Unit 1 PSV, this LER is applicable to Calvert Cliffs Nuclear Power Plant Unit 1 only.

C. INOPERABLE STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT

Unit 1 PSV 1RV201 (BM07952) was determined to be inoperable. That inoperable condition is the basis for this report. The extent of condition review determined that the condition applied to 1RV201 (BM07952) only.

D. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES:

March 2006, BM07952 (1RV201) installed during the 2006 Unit 1 refueling outage.

March 2008, BM07952 (1RV201) removed during the 2008 Unit 1 refueling outage.

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July 21, 2008, BM07952 As-Found Lift tested at offsite vendor facility. As-Found Lift Setting measured higher than Technical Specification allowable value.

July 25, 2008, BM07952 disassembled and inspected at offsite vendor facility. Inspection results revealed a low inlet nozzle torque value and indications of internal valve misalignment. Per discussion with the vendor, lack of adequate inlet nozzle torque and improper valve internal alignment can lead to erratic (high) valve lift setpoints.

E. OTHER SYSTEMS OR SECONDARY FUNCTIONS AFFECTED

No other systems or secondary functions were affected.

F. METHOD OF DISCOVERY

During As-Found Lift Testing at the offsite facility.

G. MAJOR OPERATOR ACTION

No major operator actions were taken as a result of this condition.

H. SAFETY SYSTEM RESPONSES

Condition discovered after component removed from the system.

II. CAUSE OF EVENT:

The cause of the condition has not been determined. A supplemental LER will be submitted after the causal analysis has been completed.

III. ANALYSIS OF THE EVENT:

Each Unit at Calvert Cliffs Nuclear Power Plant has two PSVs (1/2RV200 and 1/2RV201) designed to limit Reactor Coolant System (RCS) pressure to a maximum of 110 percent of design pressure (2500 psia). The Technical Specification defined setpoints for these valves are as follows:

Valve	As-Found Lift Setting (psia)	As-Left Lift Setting (psia)
1/2RV200	>/= 2475 and </= 2550	>/= 2475 and </= 2525
1/2RV201	>/= 2514 and </= 2616	>/= 2540 and </= 2590

The Technical Specification Bases state that the As-Found setpoints are the limits for operability, i.e., if a valve lifts outside of those setpoints it is inoperable. Calvert Cliffs owns eight PSVs, four sets of two that are rotated between a specific location. The As-Found Lift Setting for 1RV201 (BM07952) measured on July 21, 2008 was 2670 psia (first test), 2668 psia

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(second test), and 2654 psia (third test). This is higher than the Technical Specification Surveillance Requirement (SR) allowed value of 2616 psia. Results of the July 2008 valve inspection indicate that the high setpoint may have been due to low inlet nozzle torque and internal valve misalignment. The extent of condition review determined that the four installed PSVs are not susceptible to the same condition. In 2004, BM07952 was removed from the 1RV201 location and shipped to the vendor for scheduled testing and maintenance. The valve passed its As-Found Testing. The valve was then refurbished per the scheduled maintenance plan. However, after refurbishment, the valve did not pass As-Left Testing and was refurbished a second time. The valve again failed As-Left Testing and was refurbished a third time. The valve subsequently passed the As-Left Testing and was returned to the facility for installation in 2006.

BM07952 was installed at 1RV201 location in March 2006 and removed from the plant in March 2008. Based on the results of the July 2008 inspection, it is reasonable to conclude that for some period of time while the valve was installed in the plant, most likely the lift setting was not within the Technical Specification SR defined setpoint limit. Per 10 CFR 50.73(a), unless otherwise specified, events shall be reported if they occurred within three years prior to the date of discovery. With one PSV inoperable, the Technical Specification Limiting Condition for Operation (LCO) 3.4.10.A required action is to restore the valve to operable status within a 15 minute completion time. If this required action cannot be met, Technical Specification LCO 3.4.10.B requires the plant to be placed in Mode 3 within 6 hours and to reduce all RCS cold leg temperatures to ≤ 365 F (Unit 1) or ≤ 301 F (Unit 2) within 12 hours. The failure to recognize and meet the requirements of Technical Specification LCO 3.4.10 also should have required entry into Technical Specification LCO 3.0.3. The subject condition existed longer than the Technical Specification completion times for the associated required actions (6 hours and 12 hours). Therefore, this event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B).

There were no actual nuclear safety consequences incurred from this event. All four PSVs currently installed in the plant are not susceptible to the condition identified for BM07952. Two PSVs (1RV200 and 1RV201) are located on the Unit 1 pressurizer to provide overpressure protection of the RCS. Only one of the PSVs (1RV201) was affected by the subject condition. 1RV201 should have been considered inoperable while installed during applicable modes. While installed (2006-2008), the valve was susceptible to a late lift. Realizing that the valve could have lifted late if challenged, a probabilistic risk assessment analysis was performed.

The estimated increase in core damage frequency (CDF) was less than $1E-07$ and the estimated increase in large early release frequency (LERF) was less than $1E-08$ per year for the subject condition. As no actual transients occurred, the parameters CDF and LERF were used to show the magnitude of risk increase.

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IV. CORRECTIVE ACTIONS:

A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

1. Verified all installed PSVs are not susceptible to the subject condition.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE

1. Any corrective actions will be established when the apparent cause evaluation is completed.

V. ADDITIONAL INFORMATION

A. FAILED COMPONENTS:

The subject valve is an American Society of Mechanical Engineers Boiler and Pressure Vessel Code approved PSV designed to limit RCS pressure to a maximum of 110 percent of design pressure. The PSV is a totally enclosed, back pressure compensatory, spring-loaded valve. The valve is manufactured by Dresser Consolidated, Inc. (EPIX Identification number D243). The valve affected by the subject condition is 1RV201 (BM07952).

B. PREVIOUS LERs ON SIMILAR EVENTS

A review of Calvert Cliffs' events over the past several years was performed. No previous LERs on similar events (high PSV setpoint due to low inlet nozzle torque/internal valve misalignment) were identified.

C. THE ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIS) COMPONENT FUNCTION IDENTIFIER AND SYSTEM NAME OF EACH COMPONENT OR SYSTEM REFERRED TO IN THIS LER:

Component	IEEE 803 EIIS Function	IEEE 805 System ID
Pressurizer Safety Valves	RV	AB
Pressurizer	PZR	AB

D. SPECIAL COMMENTS

None